

Patent Claims

1. A machine having a rotor which is mounted such that it can rotate about a rotation axis and
- 5 - has a rotor external housing which is attached to rotor shaft parts and surrounds a winding former with a winding that is to be cooled,
- and
- has means for holding the winding former within
- 10 the rotor external housing, which means comprise, at least at one end of the winding former, a device which transmits torque between the winding former and the associated rotor shaft part with at least one rotationally symmetrical composite body
- 15 composed of a plastic reinforced with fiber material,
- characterized in that the composite body (13, 23)
- contains, integrally, side parts (13a, 13b; 23a, 23b) and a center part (13c, 23c) located between
- 20 them, with the side parts being formed at least in one subsection (13a, 13b; 23a₁, 23b₁) such that it widens towards the exterior in the form of a funnel, and with the center part being formed as a hollow cylinder, and with the side parts, at least
- 25 in one subsection (13a, 13b; 23a₂, 23b₂) having a corrugated shape when seen in the circumferential direction, while the center part (13c, 23c) is at least largely uncorrugated,
- and
- 30 - is connected on its side parts (13a, 13b) in an interlocking and power-transmitting manner to flange-like attachment parts (12a, 12b) composed of metal, in that at least each side part (13a, 13b; 23a, 23b) of the composite body (13, 23) can be pressed against a mating surface (14a,
- 35 14b; 26a, 26b) whose shape is matched to it, by means of a compression ring body (15a, 15b), which can be

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connected to the respective attachment part (12a, 12b; 22a, 22b) in a power-transmitting manner and has a pressing surface (19a, 19b) whose shape is matched to it, with at least a section (a) of the center part (13c, 23c) of the

composite body (13, 23) being left free.

2. The machine as claimed in claim 1, characterized by the side parts (13a, 13b; 23a, 23b) having a uniform
5 corrugated shape when seen in the circumferential direction.

3. The machine as claimed in claim 1 or 2, characterized by the side parts (13a, 13b; 23a, 23b)
10 having a corrugated shape in the form of a sine wave or a circular arc when seen in the circumferential direction.

4. The machine as claimed in one of the preceding
15 claims, characterized in that the mating surfaces (14a, 14b; 26a, 26b) are formed on the respective attachment part (12a, 12b and 22a, 22b, respectively).

5. The machine as claimed in one of the preceding
20 claims, characterized in that at least the funnel-shaped subsection of each side part (13a, 13b; 23a, 23b) has the corrugated shape.

6. The machine as claimed in one of claims 1 to 4,
25 characterized in that the side parts (23a, 23b) of the composite body (23) each have a funnel-shaped subsection (23a₁, 23b₁) and an end section (23a₂, 23b₂) in the form of a hollow cylinder, with the end sections and/or the funnel-shaped subsections having the
30 corrugated shape.

7. The machine as claimed in one of the preceding claims, characterized in that the center part (13c, 23c) of the fiber composite body (13, 23) can be pressed in an interlocking, power-
35 transmitting manner against a corresponding part of the respective mating surface (14a, 14b; 26a, 26b) by the respective compression ring body (15a or 15b, respectively)

in side junction areas to the respective side part (12a, 12b; 22a, 22b).

8. The machine as claimed in one of the preceding
5 claims, characterized in that at least the majority of the fibers in the fiber material extend without interruption at least over each junction area between the respective side part (13a, 13b; 23a, 23b) and the center part (13c, 23c) of the fiber composite body (13,
10 23).

9. The machine as claimed in one of the preceding claims, characterized in that the fiber material of the fiber composite body (13, 23) is in the form of glass
15 fibers or carbon fibers.

10. The machine as claimed in one of the preceding claims, characterized in that the flange-like attachment parts (12a, 12b; 22a, 22b) are each provided
20 with an end tooth system (29), which can engage in a corresponding tooth system on the associated part of the winding former (9) or of the side housing part (7a) of the rotor external housing (7) which is connected to the rotor shaft part (5a).

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11. The machine as claimed in claim 10, characterized in that the tooth system is designed to be self-centering.

30 12. The machine as claimed in one of the preceding claims, characterized in that the flange-like attachment parts (12a, 12b; 22a, 22b) are made of a steel.

35 13. The machine as claimed in one of the preceding claims, characterized by a screw connection (20a, 20b) between the compression ring bodies (15a, 15b) and the

respective attachment part (12a, 12b; 22a, 22b).

14. The machine as claimed in one of the preceding
claims, characterized in that the conductors of the
5 winding (10) contain metallic low- T_c superconductor
material or metal-oxide high- T_c superconductor
material.

15. The machine as claimed in one of the preceding
10 claims, characterized in that the winding former (9) is
surrounded by a vacuum (V).